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*When it comes to online auctions, “caveat emptor”
is an understatement.*

REDUCING INTERNET AUCTION FRAUD

Fraud on the Internet is developing into a major issue for consumers, businesses, and governments [1, 6, 10]. The *Financial Times* in 2003 called online fraud “an epidemic of huge and rapidly growing proportions” and noted the incidence of fraud was 20 times higher online than offline [12]. The complaints of online fraud registered at the IC3 Web site—which is jointly sponsored by the U.S. Federal Bureau of Investigation and the U.S. National White Collar Crime Center—have grown from around 20,000 in 2000 to around 200,000 in 2007, which represents a compound annual growth rate of 39% [7]. At the same time, the dollar value of losses has skyrocket-

ed at an annual rate of 50% from less than \$18 million in 2001 to over \$200 million in 2007 [7].

One area that is particularly interesting is auctions. Auction fraud reported to the Federal Trade Commission has likewise grown tremendously from 106 in 1997 to around 24,000 in 2007 [9] and continues to climb dramatically. Internet auction fraud is one of the main sources of overall Internet fraud, with estimates of incidence from 64% to 87% of all Internet fraud [4, 7]. However, major Internet auction sites estimate that fraud is involved only once in approximately 10,000 auctions [9], which appears to contradict these observations.

Understanding fraud with respect to Internet auctions is especially important because the oft-cited “network externality” in which having large numbers of buyers leads to large numbers of sellers, which leads to even more buyers, and so on. It is based upon the knowledge that the winner of the auction will receive what he or she was expecting. If more than a handful of buyers perceive that the system does not work in a fair and neutral manner, the entire network effect may start unraveling.

If the claim of such a low level of fraud were true, an auction site could encourage a higher level of buyer activity (and prices bid) by charging a minimal surcharge on the final winning bid to provide automatic insurance to buyers. Analyzing one auction site, we found that a one-dollar increase in the final winning bid translates into over \$700 million in annual dollar volume. A surcharge of one promille per dollar of the final price above the additional transaction costs such as bookkeeping, investigation of claims, and issuing of compensation should be enough to provide insurance and to leave ample additional profit for the auction site operator. The fact that insurers do not offer such policies calls into question industry’s estimates of fraud incidences.

This procedure is not as simple as it sounds, as having automatic insurance would have an effect on the behavior of both buyers and sellers. Buyers will be willing to tolerate a higher level of risk and bid higher even for unknown sellers, or sellers with lower levels of reputation. Another complication is that it creates incentives for crooked sellers and buyers to form coalitions in which they swindle the auction operator or the insurance entity. The advantage of an auction site operator compared to the occasional buyer or seller is that the operator has the resources and experience to develop methodologies that detect and reduce such swindling operations to a minimal level. By providing automatic insurance, the auction site operator would benefit from the higher level of volume in bidding activity.

We concentrate on buyers being swindled. In our study we discovered that sellers face a similar problem of cheating; however, auction houses have devoted extensive resources toward protecting sellers, but have invested limited effort into protecting buyers. Why? We contend that if sellers do not put items up for auction, the site cannot survive, while bidders/buyers on their own do not justify the existence of an auction site.

Another factor involves the fact that most sellers use the auction site multiple times (in many cases, thousands of times). As a result they develop experience and methods that protect them. Bidders, on the

other hand, have limited experience with the auction process and do not have the expertise to protect themselves.¹ For example, in most auction sites, sellers do not ship a product to the buyer until the buyer has paid for the product.

RESEARCH SUMMARY

We employed a variety of methods to undertake an exploratory investigation of Internet auction fraud. We performed a literature review of prior empirical studies on Internet fraud and auction fraud. This led to a preliminary and exploratory survey conducted in 2003. Our survey results also helped guide our participant-observation exploration: We bought and sold on major auction sites from 2003–2005 to better understand how swindlers work and what actions might be taken by the auction houses and by buyers. We also interviewed bidders and sellers that contacted us through our own buying and selling.

In our exploratory pilot study (see [5]), we surveyed 1,298 winners of Internet auctions at a major auction site to see whether they received what they were expecting. The respondents came from 14 different item categories and a full range of prices. We asked primarily two questions and collected other information from the auction site itself.

1. Did you receive any item after you won the auction in question?
2. If you did receive an item, was it what you were expecting?

We interviewed willing respondents to our survey. It was difficult to gather the data using automatic means, so we did everything manually. Generally speaking, auction houses put many obstacles to prevent automatic data gathering for such a research investigation. They limit the number of interactions one can have with other members per day. Thus, it is not obvious how to do such a study.

Staying within the rules set up by the auction houses, we were prevented from using mechanical methods such as Web crawlers; otherwise, it would have been much easier to contact a large number of auction winners. Further, the auction houses are willing to give researchers information, but what they offer is mostly meaningless for such a study. For example, looking simply at feedback does not convey much information. It carries a value of 0, neutral, or 1, so there is no magnitude. For example, a “winner” in Athens, Greece, whom we talked to lost close to

¹This can be ascertained by observing the distribution of the number of transactions or the number of feedback ratings for sellers and buyers.

Auction houses have devoted extensive resources toward protecting sellers, but have invested limited effort into protecting buyers. Why?

\$10,000 and felt very strongly about his loss. His situation and (negative) feedback for the seller carried the same weight as someone who lost one dollar in an auction.

RESULTS AND ANALYSIS

The results of our preliminary survey are as follows: We received 98 responses from the auction “winners,” 21 of which either did not receive any item at all, or did not receive what they were expecting (mostly because the item was damaged or otherwise in worse shape than described). Further, eight out of 98 received absolutely nothing at all, which represents 0.62% *minimum* (assuming everyone else, including non-respondents, received something, as we will discuss). This incidence would be 62 times higher than official estimates of fraud, and this is clearly a subset of all fraud.

If either the buyer received nothing or did not receive what was expected, we call that “swindled” (recognizing, of course, that the buyer may or may not have been intentionally swindled and that this is definitely a superset of purely fraudulent activity). *Still, knowing the incidence of “swindling” is important because it most certainly is an input into buyers’ perceptions of the fairness of auctions.*

We calculate the worst-case rate of negative response (by dividing the total negatives by total responses) and the best-case rate (by dividing the total negatives by total contacted). It depends on how one views the representativeness of our sample to know which is more “accurate.” If one feels that the respondents are representative of the population at large, then the worst-case estimate would be closer. If one

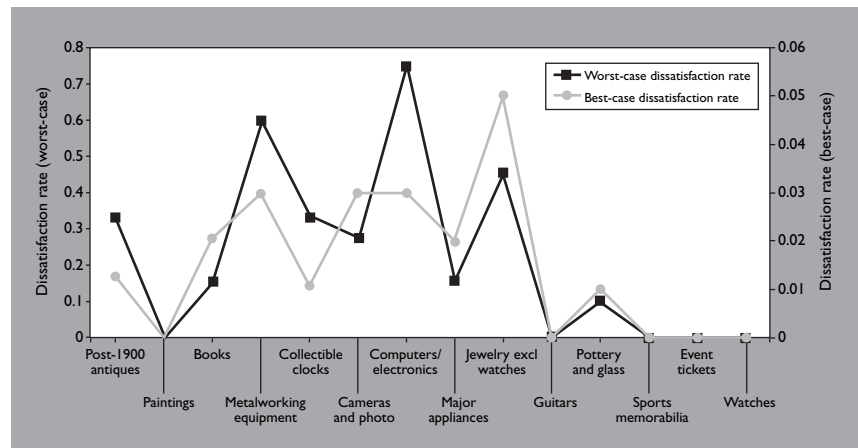


Figure 1. Dissatisfaction rates for different categories.

feels that our respondents are “disgruntled,” then the best-case estimate would be closer.

In addition, we have two opposing factors. For those who are embarrassed about being cheated, they will be underrepresented. They do not want to report that they were cheated because it would make them look foolish. On the other hand, there are people who were cheated on one auction and are so mad they want to tell their story, even if we asked them about a different auction, and that will lead to overestimation. The true rate would most likely fall somewhere in between the best- and worst-case estimates.

The percentage of negative responses varied for different categories of auctions (see Figure 1). Computers and electronics had the highest worst-case rate of negative responses: three-quarters of respondents either did not receive their computer or it arrived damaged. In terms of the best-case rates, the worst category was Jewelry (excluding watches), in which 5% of all auction winners contacted either did not receive anything at all or did not receive what they were expecting. Four categories had no negative responses (Paintings; Guitars; Event Tickets; and Watches). One surprise was that Jewelry, excluding watches, had one of the worst rates of dissatisfaction, while Watches had one of the best. In one category,

Buyers afraid of being swindled will stop participating, thus fewer buyers, meaning fewer sellers, and so on.

Sports memorabilia, we received no responses at all. Of course, these category measures should be taken with a grain of salt, as the number of responses within each category is quite low. Still, the overall response indicates a worst-case estimate of 21.4% negative, with a best-case (and conservative) estimate of 1.6% negative.

We also found the following contingencies:

- Price does not appear to be a very good predictor of whether the buyer was swindled;
- 25% of the respondents who won auctions with a selling price below an insurability cutoff of \$500 were “swindled,” versus only 5% of those winners whose items sold for more than the cutoff (we will discuss “moral hazard” later);
- The location of the seller is not related to whether the item arrived intact in our sample;²
- Having a photo is not associated with whether anything was received; and
- 26% of respondents whose auctions had a photo did not receive the item intact vs. only 11% of auction winners where there was no photo.

Perhaps one lesson to be learned from this breakdown is that buyers appear to be more careful in situations in which the dangers are more obvious.

Based on a survey of literature (for example, [2, 3, 10]), plus our interviews, plus our own participation

Selling cheap items	To establish a good track record, they put up many low cost (a few dollars) items for sale and provide excellent service. The feedback from the buyers is highly positive. Once an excellent track record has been established, they go for the kill by putting up for bid expensive items that are never delivered. Once discovered, they repeat the same process under a different identity.
Taking advantage of pooled buyer-seller feedback	Some auction houses provide rating for sellers and buyers, but they do not distinguish between the seller's past selling and buying feedback. Smart swindlers buy and sell many items for a penny or so. They provide excellent feedback to the sellers. Once they have established a long positive record, they put up items for auction.
Changing seller ID	Using several IDs so there is no track record. Auction houses try to overcome such practices by requiring sellers to provide legitimate credit card information in order to receive a seller ID. Unfortunately it is easy for swindlers to receive several credit cards and use them to open accounts on the auction site as sellers.
Changing terms	Changing the payment method. For example claiming that they accept credit card payment but after the auction, insisting on non-credit card payments.
Changing location	Use Internet broadband phone service to establish a U.S. phone number. Use a fake U.S. shipping address while actually being based overseas.
Phishing	Phishing can provide sellers with fake IDs and other information that permits them to take over an established high rating user account.

Methods swindlers use to appear legitimate.

in auctions, we derived some generalities in the swindling area. First, there are the methods used to actually execute the swindle. Second, there are methods used to avoid appearing fraudulent. The main methods used to actually execute the swindle are shown in Figure 2, while the methods used by swindlers to appear as a legitimate seller to potential bidders are shown in the accompanying table.³

WHAT CAN BE DONE TO REDUCE FRAUD?

Our findings, although preliminary, could spell trouble for bidders in online auction sites, and ultimately the sites themselves. Even though the number of buyers and sellers has been rising rapidly over the last decade, any sudden shift in perception could reverse the cycle [10]: Buyers afraid of being swindled will stop participating, thus fewer buyers, meaning fewer sellers, and so on.

We have several broad categories of recommendations based on our study. In this section, we review each category and give specific recommendations to

²Although if we think that swindlers use fake U.S. addresses, we would not expect the location to be associated with swindling. Incidentally, broadband Internet phone service—wherein non-U.S. swindlers can obtain U.S. phone numbers and answer them anywhere in the world—while providing a very valuable service to legitimate customers, is actually exacerbating this problem.

³Buying and selling on the Internet is a very dynamic system that is evolving over time. For every fraud detection procedure that auction houses institute, swindlers adapt and deploy countermeasures that overcome the new defenses. We realize that we might not have covered every method; if a reader knows of anything else, please send it to us so we can continue with our larger follow-up study.

reduce auction fraud along with the advantages and disadvantages of doing so. The broad categories are the following:

1. Increase the information shared by auction houses on buyers and sellers.
2. Make the use of legitimate escrow services extremely easy, and possibly mandatory.
3. Charge the seller an amount equal to the amount of the sale (temporarily).
4. Develop sensible insurance policies.
5. Institute regulatory control over the auction houses.
6. Encourage buyers to protect themselves.

Note that the first category is probably the most important, and the first and last are the easiest to implement.

Information on sellers. Generally speaking, the more information is disclosed on sellers (and buyers) the easier it is for buyers and sellers to verify that they are dealing with a reputable entity, leading to a higher degree of confidence in the system. The problem now is that the system is based on self-reporting by both buyers and sellers. The auction house cannot guarantee that the information they provide is accurate.⁴ It is still the responsibility of the buyer and seller to verify the data.

Auction houses collect a significant amount of data. Making more of it public increases the chances that a transaction will be valid. Here is some data that should be posted for all reputation scores:

- The *percentage* of positive responses of the total

number of transactions for sellers (some sites began doing this in 2003) rather than the absolute number. In many cases, the auction houses only reveal the number of positive scores, thus if someone sells 1,000 items, of which 100 are positive, she or he would have a higher score than someone with 99 positives out of 99 auctions.

- As mentioned in the table and discussed in Chua and Wareham [2], some sellers sell (or buy) a large number of cheaper items to establish their

reputation. To address this, we propose posting the average selling price (or a distribution of selling prices) of all the seller's previous auctions. It would be even better to divide it into months and also by item category.

- Separate statistics for selling vs. purchasing. This reduces the chances that a seller can establish a positive reputation by simply buying many low-cost items, which he subsequently sells thus doubling his positive score.
- Seller activity history (not score) as a function of time. The pattern of activity and dollar value can provide clues to participants.

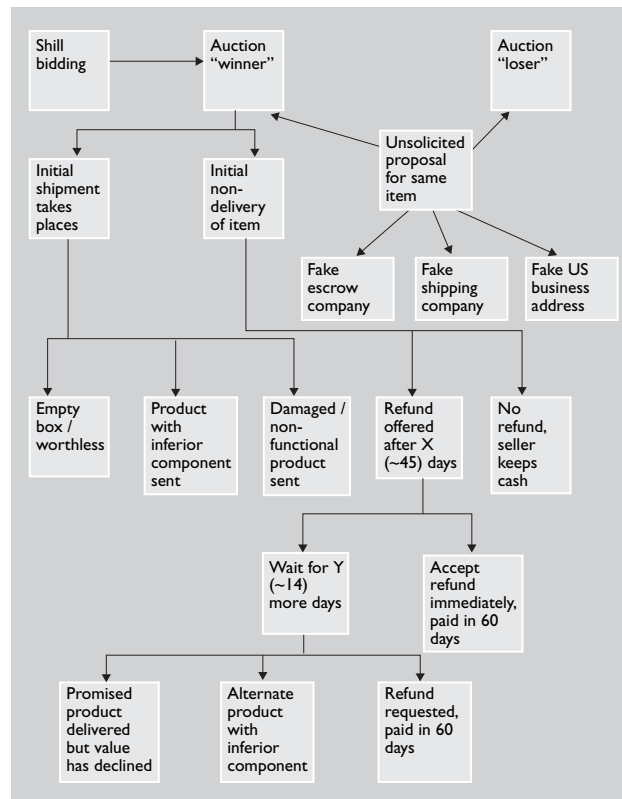


Figure 2. Possible Internet auction swindling methods.

- The number of distinct users (buyers) that participated in creating a reputation history for a seller.
- Statistics on the number and percentage of cases in which the seller was not paid, or buyer did not pay (indicates a shill bidder running up the price if it happens too often).
- Information on the seller, for example, listing the physical (as opposed to electronic) address for payment at the end of the auction. Such physical information can help determine if this is a legitimate seller or a swindler. In addition, there are Internet-based tools that could be used to distinguish real from purely virtual sellers. Auction houses could accomplish this by sending a physical letter to the postal address of the registered user, much as a bank sends a PIN under separate cover to a postal address.

⁴Using tools available on the Net it is possible to verify a significant part of the information needed to establish the person or company identity, for example, does a person with that name exist in his address? Is the phone number associated with him? Is such a company declared and filed with his local authorities? What is his educational background? Does he have a family? With whom did he deal in the past? In some cases, what is his credit score? The amount of useful data that can be collected on the Internet pertaining to an individual is surprising.

- Some auction houses limit the history available on auction results. For example, eBay gives out details (details about individual item auctions) for only 90 days after activity. A crook makes sure she or he goes 90 days back and gets good comments selling cheap items, then does not sell too many items for 90 days. The auction houses can do better by keeping the history longer. (This would raise the cost of storage but we do not feel that it would be a very large expense amortized over many auctions; further it would increase confidence and liquidity.)
- Give out actual email addresses or at least release actual email addresses and other information to the other party under certain circumstances. For example, auction winners could demand it before final payment takes place. Auction houses could inform the seller automatically that their information has been given to the winning buyer. Auction houses now avoid this practice to prevent buyers and sellers from taking their transactions “offline” and thus circumventing some of the fees charged by the auction house.
- Flags based on statistical analyses of past behavior by sellers (for example, using quality control methods). For example, if price skyrockets or volume jumps dramatically for this seller, the auction would be “flagged” for all bidders to see, thus raising awareness of the potential for swindling. The seller could have the flag removed through some certification process, for example, proving that he or she actually has the items. Another alternative is the computer gives the item the flag and the seller has the choice of continuing or not.
- Develop efficient methods for bidders to alert the auction houses about swindling sellers. Swindlers can discover the response times of auction houses to swindling alerts, for example how quickly do they remove a false auction, or announce the existence of a swindler to the bidding community? Based on the expected response time information, swindlers design the timing of their selling activity.
- Mechanism for alerting other users about sellers. This one must be treated very carefully. The advantage is that by quickly getting the word out, one avoids others from falling victim to the swindler. On the other hand, it is difficult to adjudicate and decide when someone should be “blacklisted.” It could be that a buyer hates a seller and uses it for revenge; or purely for strategic reasons, a buyer gives out some alert that reduces the price so the buyer himself can get a

better price! Or, a seller can use such a mechanism to remove (temporarily) other sellers of competing items. It is understandable why auction houses have shied away from this one, but perhaps some kind of “Amber Alert” for auction swindlers could be developed, perhaps by holding accusers responsible for issuing the alert.

- Divide sellers into classes based on their past performance and rating by buyers. Use different flags to identify reliable sellers from less reliable ones (for example, classes of power users on eBay).

Advantages and disadvantages. The more information buyers and sellers have on each other, the better off they are. We should keep in mind that this additional information can be used by swindlers to better target their messages/offers to potential victims. Auction houses, on the other hand, have interests in protecting the identity of buyers and sellers, so it is a question of balance. All of these involve disclosing information about buyers and sellers (mainly sellers). In our opinion, however, legitimate sellers should be happy to reveal their information to benefit from the price premium of being reliable.⁵ This direct cost is negligible, involving hiring a few people to develop the algorithms and the software to display the new calculations.

Escrow. Extremely easy, seamless, and possibly mandatory escrow services should be available for all auctions. A small service charge could be added to the listing fee to facilitate the transaction. We propose the following modifications to the escrow systems currently in place:

- Traders should only use escrow services officially certified by the auction house. Auction houses should develop a list of escrow services that they have certified and provide a direct link to the sites.
- Shipping the item to a third reliable party, who inspects it, instructs the buyer to pay the seller, and once payment (or proof) has been received, transfers the item to the buyer. This incurs an extra shipping cost, which may make it prohibitive for less expensive items; still, for expensive items, the shipping cost is minor compared to the cost of the item.
- We notice that the premium to reputation is about 20% on expensive items. There is a busi-

⁵Revealing the sellers identity on the auction site could be an option that the seller selects, thus giving the indication that he is legitimate. Sellers of very expensive items (cars), list in the body of the listing information that allows potential buyers to verify that they do exist and do business (their dealership title, address, phone number, vehicle location and stock number, VIN, and many pictures of the car).

The schemes proposed here increase the knowledge of buyers about the quality (or even existence!) of the items to be sold.

ness opportunity for an “intermediary” to come in, receive the item before the auction, verify it, and then put a seal of approval/authenticity of that auction [2]. The seller would receive a better price, which would be shared with the intermediary. The fact that such a service does not exist raises some questions. Auction houses could also make a feature that enables one entity to certify another’s auction. Even having an apparent certification by such an entity is not a guarantee.⁶

- A casual browsing of auction sites reveals that sellers often give blatant instructions not to check out through the official auction checkout procedure. These sorts of circumventions should be monitored and policed more effectively. It could even be done in an automated way by searching for keywords proposing to circumvent the checkout procedure.
- Some sellers offer money-back guarantees if the buyer is not happy with the items he won. What is lacking is a mechanism that actually enforces that offer when a buyer is unhappy.

Advantages and disadvantages. The advantages include a steep reduction in information asymmetries at the expense of swindlers. Information asymmetries exist when one party does not know everything relevant to a transaction that the other party knows. The schemes proposed here increase the knowledge of buyers about the quality (or even existence!) of the items to be sold. The disadvantages include greater transaction costs, even in the more mild versions and the possible exclusion of some buyers from the market (some buyers are willing to take a chance on being swindled for a lower price—those buyers would be priced out of a market in which escrow was mandatory). One could imagine an extension of this in which only auctions closing above a certain dollar amount were forced to adopt

some of these techniques.

Performance Bond. To open an account as a seller or buyer, one needs a credit card. The auction house should charge the seller an amount equal to the amount of the sale (temporarily). Then, once the buyer gives the go-ahead, the auction house would reverse the charge.⁷ Auction sites already do this on the buyer side. The amount charged could also be based on the seller’s reputation or other characteristics of the seller (such as, how many prior items sold at the current price range). This “seller escrow” would also benefit sellers without an established reputation. If the credit card transaction is rejected, then the auction house knows that this is not a legitimate seller and will remove his or her ID and items from the auction site. The auction site would also know immediately that they are probably dealing with a swindler.

The company would need to provide a cash flow management guarantee (return your money within, for example, one day), though, to protect those legitimate sellers who make a living selling on auctions. Even so, most sellers would only take a one-day hit because after the first day, they would be applying their performance bond to future auctions.

Advantages and disadvantages. The performance bond is a very strong level of protection and would sharply increase trust in the system as well as sharply reduce swindling. However, it is fundamentally a little unfair as it requires sellers to be relatively well-off, with enough credit on their credit card to pay for the items they already own. If someone was auctioning off items to raise money, say for a hospital bill, and they were already in debt, they would not be able to participate as a certified seller under this system. An alternative could be some kind of certification by the auction house for unusual circumstances, but this is likely to fail for two reasons: the auction houses would like to avoid certifying individual sellers for legal reasons; and the less “automated” the process, the more

⁶Choicepoint is an example of a false and dishonest entity that appeared as a legitimate business for a number of years.

⁷Some car rental and hotel companies use a similar method to protect themselves against nonpaying customers.

likely that actual swindlers would be able to pass off as legitimate customers. A third alternative could be the encouragement of third-party certifiers (or surety bond companies) such as BuySafe, which certify sellers for a commission—paid by the seller on items sold—and promise to compensate buyers if there is a problem.

Insurance. Appropriate insurance policies could encourage electronic commerce activities. Premiums should be reasonable, and mechanisms designed to reduce or prevent collusion. The way it would work would be that the buyer would pay a premium to the insurance company and if there is a problem, the buyer makes a claim and is reimbursed. Here are a few possible recommendations for insurance:

- Insurance by payment beforehand. At the moment the auction is consummated, the buyer is charged a premium based on the seller's reputation and the category. These are both known in advance and so could be prominently advertised within the auction itself while it is going on. The buyer would pay the premium, although there would be nothing preventing the seller from subsidizing or even paying the premium him- or herself, just as some sellers pay for shipping.
- Insurance companies should be certified by the auction house, with recommended insurers linked directly from the auction house.
- Insurance premium size should be tied to the level of fraud in the category and the past reputation/insurance claim activity related to the seller. Insurers would then have the tools to go after swindlers and to increase the cost of being a crook.
- Another option is that the seller would be required to take out the policy.

Advantages and disadvantages. Smarter insurance policies would make the market fairer, especially if taking out a policy were mandatory. It would be fair because buyers would be hedged against absolute fraud and would not lose their money. In addition, the market for insuring fraud would become more efficient, because there are relatively few insurers and they would be scrutinizing the antecedents of fraud and pricing the risk accordingly as their own money would then be on the line if they are wrong. The disadvantage is that on the margin, the increased transaction cost would exclude some buyers. In addition, there could be a moral hazard problem in that buyers would be participating in riskier auctions (ones they estimate might have a fraudulent outcome) but they do not care as much because their insurance

coverage provides a safety net.

Regulatory control. State or federal governments in the U.S. and elsewhere may want to make sure that the auction houses follow the rules set in their own descriptions of the mechanisms. There is a need for an agency that confirms they follow without bias the rules they advertise. Auction houses have at their disposal the ability to take advantage of situations in which they can make extra money at the expense of sellers and/or buyers, just as a real estate agent could conceivably buy and then resell a house rather than showing it to a potential buyer. We are not claiming that auction houses intervene in the auction markets frequently, but in fact who would know if they did or did not? Are the auction houses completely neutral? Some sort of government oversight might be helpful in this area.

In return for submitting to regulatory control (and for taking some proactive steps toward reducing fraud as outlined in this article), we propose that auction houses could be shielded from some forms of legal liability in fraud prevention. It could be that auction houses have resisted any action up until now for fear of legal reprisals, in other words, if they pursue better escrow or insurance policies, that might be considered an admission of guilt and open them up to lawsuits by unhappy auction winners.

Advantages and disadvantages. Without any a priori knowledge of biased interventions in their own auctions, we are not certain that instituting government oversight will create more problems than it solves. Still, adding government oversight will make the entire system more transparent. Further, if auction houses could be shielded from some legal liability through an oversight process, it might give them incentives to implement anti-fraud policies rather than simply claim they are a neutral market and are not at all responsible for members' trades.

Buyer precautions. There are many tools available on the Internet to help either party verify the information given by a seller. Examples:

- Auction houses should ask a buyer (and seller) during the registration process to provide a phrase/code that is known only to them. Any email message coming from the auction house to him should have that phrase displayed in it. This enables the buyer (or seller) screen out fraudulent messages.
- Putting the name of a company and the word "fraud" or "scam" into a search engine like Google.
- Check with the Chamber of Commerce and Better Business Bureau regarding the company.

- Do a telephone number search (a reverse search and check the name of the party owning that number); legitimate companies should have their own number. The buyer can also call that number to make sure that a live entity is behind that number. You can also cross match it to an email address.
- Occasionally, a seller asks to send cash or equivalent. What one can do is send an email saying that “by coincidence I am passing through your city. Can I drop by, pay in cash, and pick up the item?” If the seller does not respond, or says I only ship, do not do business with that person. Smart crooks could bluff, however, so there is no guarantee.
- Through the exchange of email, one acquires much more information about the entity with which one is dealing. Phone number, name, address, tracing the routing of response messages and so forth. Then one can use the Internet to check on the entity, as discussed earlier. If the seller does not respond to your questions/email this should raise suspicion.
- Always pay with a credit card. Some sellers will not sell the item to you, but that is the price you pay for security. Some swindlers allow PayPal, but they only accept the one that comes from your bank account, not the kind of charge that comes through your credit card.
- When you receive a package, open it in front of the delivery person or company representative. You can tell your delivery company not to drop off without a signature.
- Go to an “eBay Xchange Point,” or something equivalent. In Switzerland, eBay has proposed meeting points at major train stations where buyers and sellers can meet face-to-face to inspect the goods and pay for them. This is not entirely practical for goods bought far away, but for more local transactions, nothing beats face-to-face.
- Chua [2, 3] also proposes being more proactive in reporting and preventing fraud through such techniques as collective action on reporting (for example, to Traderlist), contacting other potential victims directly, or even “vigilantism” in which buyers deliberately sabotage auctions they feel are fraudulent.

Advantages and disadvantages. The advantages of buyer precautions are obvious, they reduce fraud and make it more difficult for crooks. They do not cost as much, if anything, to implement. The disadvantages are that not everyone would take advantage of them.

CONCLUSION

Auction houses today appear to be at a crossroads, with many people now losing confidence in the system [8]:

“...do you have a reasonable expectation that the Mac G5 you are bidding on is going to be shipped to you? How about the Sony plasma 60-inch monitor? Or, the Sony PSP for \$50 to \$100 over retail? No, you don't. Now, you might say, ‘Hey, moron! Why are you bidding on stuff like that on eBay? Don't you know that 95% of those auctions are fraudulent, especially the ones that only accept payment via Western Union?’ Of course, I know. But what about all of the people who don't?”

Now is the time to act before the negative cycle mentioned at the beginning of this article develops in full swing. We hope that some of the recommendations listed here restore the public's confidence in the system. While it may be impossible to eliminate Internet auction fraud, at the very least we may be able to reduce it drastically and make it very expensive for those who persist. **■**

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